S/147/61/000/001/016/016
E032/E314

Determination of ....

Fig. 7:

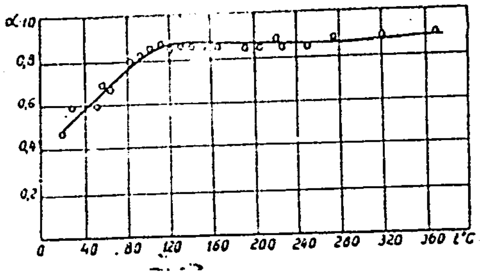
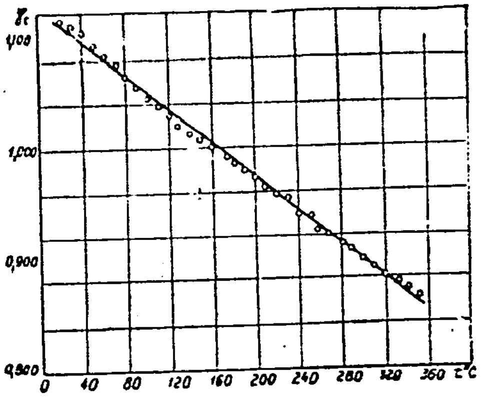


Fig. 8:



Card 6/6

L 13693-63 EWP(j)/EWT(m)/BDS AFFTC/ASD Pc-4 RM

ACCESSION NR: AT3003084 S/2940/61/000/000/0220/0221

57

AUTHOR: Pukhov, A. P. 15

TITLE: Device for testing unvulcanized rubber. Author's Certificate No. 120026, 15 cl. 42k, 51 (reg. No. 607962, 18Sep58)

SOURCE: Sbornik izobreteniy; priborostroyeniye i sredstva avtomatizatsii. Kom. po delam izobr. i otkry*tiy. Moscow, Tsentr. byuro tekhn. inform., 1961, 220-221

TOPIC TAGS: unvulcanized rubber, testing device, penetrating needle, pneumatic cylinder, reducer, manometer

ABSTRACT: The device (see Enclosure 1) operates by measuring the velocity with which a metallic needle penetrates the tested specimen. The needle is under a constant pressure supplied by a pneumatic cylinder. To stabilize the pressure, compressed air passes into the cylinder through a reducer and is manometrically controlled. Readings are taken from the moment the needle touches the specimen, and continue for a definite period of time. The depth of penetration is measured on the scale with an indicator fixed on the needle. The hardness of the rubber is determined from the velocity of penetration. Orig. art. has: 1 figure.

ASSOCIATION: none

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S/138/60/000/007/005/010
A051/A029

AUTHORS: Malkina, Kh.E.; Pukhov, A.P.; Ionov, V.A.

TITLE: The Ultrasonic Defectoscopy of Tire Casings

PERIODICAL: Kauchuk i Rezina, 1960, No. 7, pp. 12 - 20

TEXT: In most Soviet plants the quality check of tire casings has been conducted until recently by external examinations and knocking. This method was satisfactory due to its subjective nature. The ultrasonic defectoscopy method is recommended. Figure 1 represents the operation principle of an ultrasound apparatus. The NIIShP of the Soviet Union has designed an apparatus which is described in great detail. It has 6 channels plus an extra receiver and generator to ensure continuous operation in cases of a channel break-down. Figure 2 is an external view of the apparatus. The circuit diagram (Fig. 3) of the apparatus contains a block of feeders, a generator, receivers and transmitters. The feeding block has its own regulators, located on the front panel of the casing. The circuit diagram of the feeding block is shown in Figure 4, and that of the generator in Figure 5. The circuit diagram of the receiver is given in Figure 6. A diagrammatic cross-section of the transmitter is seen in Figure 7. The emitter

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contained in the metal body is made of barium titanate. The thickness of the barium titanate plate is calculated from the formula

$$t = \frac{2200}{\varphi} = \frac{2200}{50} = 44,$$

so that it can function at a frequency of 50 and 150 Mc. In the formula t is the thickness of the plate in mm, φ - the resonance frequency in Mc. The casings being tested must be clean. Otherwise the defectoscope may give false readings. Water is used as wetting liquid with additions of 10 - 15% ethyl alcohol to ensure more uniform wetting of the casing. The authors tested casings of various sizes, starting at 5.60 - 15 to 12.00 - 20. The number of correct readings represented 93% of the total tested. There were different defects present, such as lamination, porosity, air bubbles, foreign bodies, destruction of the casing. The results of the tests conducted with the defectoscope are listed in Table 3. As a result of the experiments and tests carried out by the authors, several conclusions were drawn: 1) The defectoscope operating with 50 kc can detect defects in casings of small dimensions comprising a thin-walled body (5.60 - 15), as well as in massive casings with thick-walled bodies (12.00 - 20). 2) The size of the smallest defects detected with the apparatus on an equivalent surface was 7 - 8 mm in diameter, which shows that the apparatus has a high sensitivity. False data in most

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The Ultrasonic Defectoscopy of Tire Casings

cases meant the detection of "false" defects. 4) The reliability of the apparatus in operation is high. During its functioning period (one year) no damages in the electrical part of the apparatus were observed. 5) The apparatus described can be installed in tire plants as a laboratory and production apparatus for selective, total or combined flaw detection, as well as in automobile and tire-repair plants. 6) The drawback of the defectoscope is the absence of a recorder of the defects shown. The duration of the testing of one casing will be 4 min when an automatic recorder and a perfected tub are introduced into the design of the defectoscope. There are 3 tables, 4 circuit diagrams, 2 diagrams, 1 graph, 1 photograph and 3 English references.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

Card 3/3

[illegible], L.L.; [illegible], A.P.; SHEVYAKOV, N.N.; KOSHELEV, F.F.; NOVIKOV, M.I.

Continuous action proportioning unit for free flowing materials. Kauch. i rez. 24 no.5:46-48 My '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

KUDINOV, V.M.; PUKHOV, A.P.; LISOGURSKIY, I.Z.; TERMER, V.Yu.

Experimental assembly for the automatic weighing of powdered components for rubber mixtures at the Yaroslav Tire Factory. Kauch.i rez. 19 no.3:45-49 Mr '60. (MIRA 13:6)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i Yaroslavskiy shinnyy zavod.
(Yaroslavl--Tires, Rubber) (Weighing machines)

PUKHOV, A.P.

MALKINA, Kh.E.; PUKHOV, A.P.

Using high frequency electric heating in rubber technology.
Kauch.i rez. 16 no.4:23-28 Ap '57. (MIRA 10:7)
(Induction heating) (Rubber)

4088 PUKHOV, A. P.

Issledovanie protsessa nagrevaniya reziny massiviykh izdeliy s primeneniem TVCH pered pomeshcheniem v vulkanizatsionnoe oborudovanie. M., 1954. 12 s. 21 sm. (M-vo vyssh obrazovaniya SSSR. Mosk in-t khm. mashinostroeniya). 100 ekz. B. ts. - (54-56697)

GORANSKIY, V.V.; MALKINA, Kh.E.; PUKHOV, A.P.

Heating tire casings prior to forming and vulcanization. Kauch. i rez. 17 no.11:11-17 N '58. (MIRA 11:12)

1. Moskovskiy shinnyy zavod, Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Electric heating) (Automobiles--Tires)

SOV/142-2-1-19/22

15(9)

AUTHORS: Malkina, Kh.E. and Pukhov, A.P., Candidates of Technical Sciences

TITLE: The Application of HF Heating in Rubber Manufacturing Processes (O primenenii v. ch. nagreva v tekhnologii rezinovogo proizvodstva)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - radiotekhnika, 1959, Vol 2, Nr 1, pp 118-119 (USSR)

ABSTRACT: In a letter to the editorial board of the periodical "Izvestiya vysshikh uchebnykh zavedeniy - radiotekhnika" the authors state that high frequency heating in the electric field of a capacitor is especially suitable for the rubber industry. Thereby, they refer to the paper of A.V. Netushil, published in "Radiotekhnika", Vol 1, Nr 1, p 25. In this connection, the authors list the technological processes which are developed with the application of high frequency heating by the NII shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry): decrystallization of natural rubber;

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SOV/142-2-1-19/22

The Application of HF Heating in Rubber Manufacturing Processes

preliminary heating of rubber, rubber-metal and rubber-fabric products prior to shaping and vulcanizing; drying of sponge products; etc. Further, the Institute works on the volcanization of sponges and tires in metal molds, etc. The introduction of the dielectric heating method is delayed by the completely inadequate output of high frequency generators for dielectric heating. In addition, the development of measuring instruments with small input capacitances is necessary, since the existing models have too high input capacitances which detune the HF generators, for example, the tube voltmeter VKS-7b. The application of high frequency currents requires additional investigations, since this method leads to a reduction of the production costs and improves the quality of the products. Finally, the authors point out that the number of high frequency heating specialists must be increased.

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SOV/142-2-1-19/22

The Application of HF Heating in Rubber Manufacturing Processes

There is 1 Soviet reference.

ASSOCIATION: NII shinnoy promyshlennosti MKhP (Scientific Research Institute of the Tire Industry of MKhP)

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S/081/60/000/022/013/016
A005/A001

Drying of Latex Sponge by Applying High Frequency Currents

0.34 to 0.036, and the dielectric constant (ε) decreases from 3.95 to 1.84. At the decrease of tg δ and ε, their values remain in that range in which the sponge is heated further effectively. This change of the electric characteristics favorably affects the quality of the sponge, because it does not allow the overheating of the sponge. In the general case, the electric sponge properties are dependent on the composition of the latex mixture, the porosity of the sponge, and the carefulness of washing off. The better the washing off of the sponge, the higher is the drying process rate. The intensification of the sponge drying by increasing the frequency of the current and the intensity of the electric field is possible up to a definite limit which is due to the decrease in the quality of the sponge at ver very quick drying. In the drying of a test piece of 40 mm thickness for 6 minutes the rate increases during the first minute, then it reaches a maximum, and after 3 minutes the drying rate is low, and the piece is dried in the main. During the remaining 3 minutes, the moisture content is brought to the ultimate value. The greater the thickness of the test piece, the lower is the drying rate. The temperature of the sponge during the drying process is not constant. If the drying intensity is low, the functional curve of the sponge temperature versus the drying duration passes through a maximum, not exceeding a definite allowable value. At

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A005/A001

Drying of Latex Sponge by Applying High Frequency Currents

intense drying, the sponge temperature increases monotonously. The higher the accuracy in washing off of the sponge, the lower is the value of tg δ, the lower the probability of its overheating during the drying process. The layout of a pilot unit for sponge drying is described. The optimum conditions for sponge drying and the economical substantiation of the expediency of drying the sponges by h. f.-currents are presented.

I. Pil'menshteyn

Translator's note: This is the full translation of the original Russian abstract.

Card 3/3

SOV/138-59-4-6/26

AUTHORS: Korotkova, A.A., Fomina, L.S., Malkina, Kh. E., Pukhov, A.P.

TITLE: A Method of Gelling and Vulcanizing Foamed Articles from Latex (Metod zhelatinirovaniya-vulkanizatsii gubchatykh izdeliy iz lateksa)

PERIODICAL: Kauchuk i Rezina, 1959, Nr 4, pp 19-23 (USSR)

ABSTRACT: Latex foams can be gelled and vulcanized by radio-frequency current in the 10-20 mc/s range, by high-frequency current from machine generators in the 500 to 10,000 c/s range, or at power frequency of 50 c/s. Experiments were made using moulds formed of reinforced rubber with electrode in the base and in the lid of the mould. Standard "Revertex" mixes containing 50% dibutylphthalate plasticizer were used for these tests. Difficulties through corrosion were encountered when working at 50 c/s frequency with the original aluminium electrodes. Tests were made with various electrode materials listed in Table 1 and it was found that stainless steel, mark EYaIT, showed only 0.002% weight loss on a four-hour test at 50 c/s and negligible corrosion with up to 10 or 12 repeat tests of this duration. At higher frequencies the electrode life with this material

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SOV/138-59-4-6/26

A Method of Gelling and Vulcanizing Foamed Articles from Latex

is prolonged indefinitely. The samples first tested were 100 x 100 x 35 mm in dimensions. The resistivity of various Revertex mixes, and of the foam blown from them to 3 times original liquid volume, are given in Table 2. Figure 1 shows change in resistivity with temperature at applied voltages of 5 and 8 volts. Figure 2 shows the current/voltage relationship for a foam extended by a factor of 3.5, and variation of resistance with expansion of the foam is tabulated in Table 3. The resistance of the later mixes and the foams follows Ohm's law, and the resistance increases considerably on foaming. The curve of temperature versus time for electrified intensities of 12.5, 11.0 and 6.2 V/cm are shown in the curves of Figure 3. Experiments were then carried out on specimens 260 x 350 x 40 mm at 50 V (12.5 V/cm) and 25 A initial current on the electrodes. Variation of temperature and current with time is shown in Figure 4. The current was applied for 10 minutes, after which time the temperature reached 130°C. The specimen was left in

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A Method of Gelling and Vulcanizing Foamed Articles from Latex

the closed mould for a further 10 minutes and cooled back to 90°C, at which temperature the foamed specimen could be removed from the mould without change of its moulded dimensions. The specific gravity, modulus, permanent deformation on compression, and ageing coefficients of specimens, where heating current was applied for 8, 10 and 12 minutes, are compared in Table 4. Power consumption is estimated at 0.3 to 0.45 kWh per kg of foam (or sponge latex). In order to produce articles such as car seat cushions with cavities in the foam, it is necessary to dispose the electrodes in the projections forming these cavities in strips so that the area of the top and bottom electrodes are equal. Exploratory trials were made on cushions 350 x 260 x 200 mm dimension, loaded at 6 V/cm and with an initial 50 c/s current of 0.014 A/cm^2. Temperature increased to 130°C after 15 minutes power application, and was allowed to decrease to 95°C after switching off before the mould was opened (30 minutes cooling time). It is suggested that similar methods and cycles could form the basis of a continuous process for gelling and vulcanizing foamed latex articles.

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A Method of Gelling and Vulcanizing Foamed Articles from Latex

There are 4 figures, 4 tables, and 3 English references, which include British patents 677482 (1950) and 654238 (1946).

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy i Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (The Scientific-Research Institute for Rubber and Latex Articles and The Scientific-Research Institute of the Tyre Industry)

Card 4/4

KURANOV, I.V. [deceased]; SHEPELEV, I.M.; KURANOV, A.I.; KURANOV, A.P., kand. tekhn. nauk, retsenzent

[Automation of equipment for the manufacture of cables and industrial rubber production] Avtomatizatsiia kabel'nogo i rezinotekhnicheskogo oborudovaniia. Moskva, Mashinostroenie, 1965. 371 p. (MIRA 18:5)

PUKHOV, A.P. (NIIShP)

Processing principles in vulcanizing of castings using computing machines.

Report to be presented at the Third All-Union Conference on automation and mechanization of major rubber production processes, Dnepropetrovsk, 2-6 Oct 62

MALKINA, Kh.E., kand. tekhn. nauk; PUKHOV, A.P., kand. tekhn. nauk

Utilization of high-frequency heating in the operating procedures of the rubber industry. Izv. vys. ucheb. zav.; radiotekh. 2 no.1: 118-119 Ja-F '59. (MIRA 12:5)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti Ministerstva khimicheskoy promyshlennosti.
(Induction heating) (Rubber industry)

Puchov A. P.

62B-2-6/8

AUTHORS: Kibal'nikov, V. I; Mal'kina, Kh. E; Pukhov, A. P; Tikhomirov, P. I.

TITLE: Decrystallisation of Natural Rubber by Heating with a High Frequency Electric Current. (Dekristallizatsiya natural'nogo kauchuka putem nagrevaniya elektricheskim tokom vysokoy chastoty).

PERIODICAL: Kauchuk i Rezina, 1958, Nr.2. pp. 31 - 34. (USSR).

ABSTRACT: Natural rubber has a congealed structure and is not elastic (the hardness of the surface = 60/70 units, according to Shore). It cannot, therefore, be processed mechanically without preliminary decrystallisation. It is usually decrystallised by heating with the aid of a hot air current in special chambers with a periodic, uninterrupted or combined action; deficiencies of these chambers are discussed. Decrystallisation of natural rubber, by heating with high frequency current, makes it possible to make use of the influence of the heat - inertia properties of natural rubber on the rate of the process and thus decreasing the duration of the decrystallisation process. The transition from the crystalline to the amorphous state takes place when heating to a temperature of 45°. The hardness of the

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62B-2-6/8

Decrystallisation of Natural Rubber by Heating with a High Frequency Electric Current.

rubber decreases to 10 - 20 units on melting of the rubber crystals, and the rubber can then be processed mechanically. Natural rubber is an excellent dielectric, and its characteristics are given. Natural rubber has a coefficient of dielectric loss = 0.006 - 0.100 (generally 0.02 - 0.06). It can be successfully heated in a high frequency electric field. The Leningrad Tyre Factory has introduced a plant for the decrystallisation of natural rubber, consisting of a heating chamber and a generator TV (type ЛГД -30 (viz. Fig. A and B, page 32); details of the plant are given. When heating natural rubber with high frequency currents it is observed that (1) when heating to a temperature of 140°C no detrimental signs of resinification of the natural rubber occurs due to the short period of influence of increased temperature, (2) when natural rubber is heated to a temperature above 40 - 45°, the strength of the bonds between the protective and the remaining foils, and also between the separating foils, is lowered which makes it easier to remove the protective layers to separate the foils. The temperature is not uniformly

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62B-2-8/8

Decrystallisation of Natural Rubber by Heating with a High Frequency Electric Current.

distributed when the generator ЛГД-30 with one earth electrode is used. This is caused by the large concentration of the electric field near the high potential electrode which has a smaller surface than the low potential (earthed) electrode. Comparative data on decrystallisation methods for natural rubber are given in a Table on page 33. This method makes it possible to suppress resinification of the rubber, thus improving its quality, To ease the process of decrystallisation, and to improve the sanitary hygienic conditions of work, the chambers used for the decrystallisation do not require long heating, and therefore can be used continuously as well as periodically. The chambers can also be used for the decrystallisation of chloroprene rubber. There are 2 Figures and 1 Table.

ASSOCIATION: Leningrad Tire Plant, Scientific Research Institute of the Tire Industry. (Leningradskiy shinnyy zavod, Nauchno-issledovatel'skiy institut shinnoy promyshlennosti).

AVAILABLE. Library of Congress.

Card 3/3

1. Rubber-Processing 2. Rubber-Decrystallization 3. Rubber-Electrical properties 4. Rubber-Induction heating

MALKINA, KH. E.; RUKHOV, A.P.; SAVINKOVA, A.M.

Method of drying and vulcanizing articles made from latex. Kauch. i rez. 17 no. 7:21-26 Jy '58. (MIRA 11:7)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i nauchno-issledovatel'skiy institut lateksnykh i rezinovykh izdeliy.

(Rubber--Drying)
(Vulcanization)

SOV/138-58-7-6/19

AUTHORS: Malkina, Kh.E., Pukhov, A.P. and Savinkova, A.M.

TITLE: Methods of Drying and Vulcanising Latex Products (Metod sushki-vulkanizatsii izdeliy iz lateksa)

PERIODICAL: Kauchuk i rezina, 1958, Nr 7, pp 21 - 26 (USSR)

ABSTRACT: Although water in latex gel is only loosely held to the material, drying is slow because of low internal diffusion. Latex products cannot be dried effectively by convection. With an initial water content in the gel following syneresis of the order of 40%, drying temperatures are limited because of the danger of formation of pores. The possibilities of high-frequency heating are considered to be limited because an air gap must be allowed between the electrodes and the gel to permit the water vapour to escape and the voltage necessary to overcome this air gap will give rise to high current in the gel, since the internal resistance of the wet gel is comparatively low. The high current may spoil the product, and in any case the gel will lose heat rapidly to the more massive core on which it is laid.
Short-circuit heating, by passing current directly through the gel, becomes slow as the gel dries off and

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suffers from difficulties through corrosion of the electrodes.
The preferred method, therefore, is one of drying by conduction from a heated core on which the gel is laid. Water evaporates freely from the exposed surface but vapour held between the gel and the core inhibits migration to the under-surface. The heat taken in from the core is not sufficient to ensure intensive drying at thick sections, so supplementary heating was provided by radiation from an infra-red lamp above the gel. With this method, the processes of drying and of vulcanisation are inseparable. Experiments were made with gels from latex Nr 4, using specimens 200 mm dia. and 12 mm thick, laid on an electrically heated plate or core. Layers were cut from top, centre and bottom of these specimens throughout the drying time for moisture determination. The curves in Figure 1 show percentage moisture against time, in hours, for drying by conduction from the heated core alone. The four diagrams are for four different core temperatures and Curve 1 is for top, Curve 2 for middle and Curve 3 for bottom of the specimen in each case. Figure 2 shows the

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Method of Drying and Vulcanising Latex Products

same story but in this case the three diagrams are for top, middle and bottom of the specimen and four curves are plotted on each diagram for four temperatures from 70 - 130 °C. These curves suggest that the optimum core temperature is 110 °C.
Tests were then conducted with combined heating, using a 500 W infra-red lamp and holding the core temperature at 110 °C. The three diagrams in Figure 3 are for top, middle and bottom of the specimen and the four curves on each diagram are for different voltages applied to the lamp - Curve 1 without radiation, to Curve 4 with lamp at 180 V applied. The separate diagrams in Figure 4 are for no volts, 110 V, 140 V and 180 V, respectively and the three curves on each diagram are, 1 for top, 2 for middle amd 3 for bottom of the specimen.
The temperature at which pore formation, at any given moisture content, occurs must be the limiting factor. Figure 5 shows the relation between these two factors. With an initial moisture content of 35%, the specimen temperature must be below 112 °C. The latex specimens, tested, vulcanise at 150 - 160 °C. Consequently, moisture

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content had to be reduced to 4-5% before this temperature could be applied. The temperature should be raised as drying proceeds. Figure 6 shows the rate of reduction of moisture with - Curves 1 constant core temperature of 110 °C and, Curves 2, increasing core temperature as drying proceeds. From this work, parameters were derived for drying an actual latex product by combined conduction and radiation heating.
The experimental apparatus shown in Figure 7 is set up to dry and vulcanize a bathing shoe of 2-3 mm thickness at the time the gel was formed. Table 1 shows the properties attained in different parts of the shoe, with various heating regimes.
Table 2 shows the effect of vulcanising at various temperatures for different length of time on this Nr 4 latex. This suggests that optimum conditions are obtained at the higher temperatures for short times. Finally, Table 3 shows an optimum drying and vulcanising regime for production of an actual shoe from this latex. It calls for a two-hour drying period with temperatures raised from

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Method of Drying and vulcanising Latex Products

60 - 130 °C in four stages and a vulcanising time of 25 minutes at 150 °C. The moisture content at the time of transition from drying regime to vulcanising regime should not exceed 4-5%.
There are 7 figures and 3 tables.

ASSOCIATIONS: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific-research Institute of the Tyre Industry) and
Nauchno-issledovatel'skiy institut lateksnykh i rezinovykh izdeliy (Scientific-research Institute for Latex and Rubber Products)

Card5/5

1. Synthetic rubber--Dehydration 2. Synthetic rubber--Vulcanization

S/081/62/000/008/054/057
B158/B101

AUTHORS: Malkina, Kh. E., Pukhov, A. P.

TITLE: Drying and vulcanization of rubber latex articles by an industrial-frequency current and contact radiation

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1962, 601, abstract 8P354 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii, no. 4, 1961, 26-29)

TEXT: Gelatinization-vulcanization of latex sponge by an industrial-frequency current and the contact-radiation method of drying-vulcanizing monolithic latex articles are described. In both cases, an industrial frequency current of 50 cps was used. Vulcanization of articles 300 mm thick at a current density of 0.02 a/cm^2, took 20-28 min, which is 4-5 times shorter than with heating by heat transfer. Energy consumption in vulcanization is 0.3-0.45 kw-hr per kg of sponge. A second method was developed for latex articles produced by gelatinization. A metal core, on which is dried and vulcanized a gel of complex configuration, is

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Drying and vulcanization of ...

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B158/B101

provided with an electric heater; the outer surface of the article is subjected to infra-red heating. The drying temperature is kept lower than the temperature at which sponge formation occurs. The total drying-vulcanizing time is 145 min, energy consumption is 0.24 kw-hr for heating of the core and 0.3 kw-hr for the infra-red heating. [Abstracter's note: Complete translation.]

Card 2/2

MALKINA, Kh.E., PUKHOV, A.P., IONOV, V.A.

Ultrasonic flaw detection in tire casings. Kauch.i rez. 19 no.7:12-20 Jl '60. (MIRA 13:7)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Tires, Rubber--Testing) (Ultrasonic testing)

SOV/138-58-11-4/14

AUTHORS: Goranskiy, V.V., Malkina, Kh.E. and Pukhov, A.P.

TITLE: Preheating Tyre Casings Before Moulding and Vulcanisation (Nagrev pokryshek pered formovaniyem i vulkanizatsiyey)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 11, pp 11 - 17 (USSR)

ABSTRACT: Preheating improves the strength of bond between the parts of the tyre by increasing the interaction between rubber mixes at the interfaces between layers, as a result of higher plasticity and dispersibility. It gives increased adhesiveness at these surfaces through diffusion of sulphur into the rubber mass away from the surfaces and reduction of stresses in the casing at different stages of the manufacturing processes.

With preheating before moulding or before vulcanisation, tyres show increased lives on rig test and considerable decrease in scatter between greatest and least lives on test. Best results are obtained where tyres have been preheated by high-frequency current and are subsequently pressed and moulded without intermediate cooling, as shown in Table 1. Figure 1 shows the plasticity of different mixes used in the tyre against temperature. A sufficient degree of plasticity for satisfactory moulding is attained in the breaker and carcass mixes at 60 - 70 °C, whereas

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the tread mix is much less plasticised at this temperature. Equilibrium between the solubility of sulphur and the content of sulphur in the mix occurs at about these temperatures. Experiment shows that preheating to this temperature gives least relaxation and greatest improvement in tyre quality. Higher temperatures can lead to porosity and pre-vulcanisation. Average breaker rubber mix is subject to pore formation at 73 °C and in natural rubber tyres the breaker mix is the most sensitive to pre-vulcanisation. Tyres may remain in a pre-heated condition for 40 - 50 min if their temperature does not exceed 70 - 80 °C.

Different parts of a tyre have different electrical characteristics which leads to unequal temperature distribution in a high-frequency heating field. The simplest and most effective arrangement for HF heating is between parallel electrodes, as shown in Figure 2. Temperature differences in an unmoulded synthetic rubber tyre preheat for 8 to 10 minutes in an HF field at 8 kV and 11 megacycles are shown in Table 2 and Figure 5. Dielectric constant times loss angle gives a lower loss factor for the tread part of the tyre than the internal parts, so, assuming that the specific heats of the different rubber mixes are similar, the carcass and breaker rubber will attain higher temperatures. This is a desirable state of affairs and is one of the advantages of HF heating as compared with preheating by hot air.

Heat treatment may also be applied to moulded tyres before vulcanisation. In this case, temperature distributions are as shown in Table 4 and Figure 6. (Figures 5 and 6 show temperature distributions with HF heating and with hot-air heating.) Where a moulded tyre is preheated before vulcanisation, the scatter on life test is reduced if the tyre is subsequently cooled before vulcanisation. The curing bag attains a high temperature on account of water in the composition of the lubricating medium used on the surface of the bag. The authors suggest that the best effects of heat treatment are obtained with two-stage treatment before moulding and before vulcanisation; comparisons of rig test lives with HF heating at different stages of manufacture are given in Table 6.

Heat treatment of vulcanised tyres is also beneficial, having an annealing effect upon stresses remaining in the

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Preheating Tyre Casings Before Moulding and Vulcanisation

tyre after vulcanisation. Rig tests on tyres so treated show double life, on average, and great reduction in scatter.

Results of field tests on three different classes of road surface are shown in Table 7, and confirm that tyres subjected to HF heat treatment before moulding and vulcanisation have substantially better life than standard tyres, particularly on bad surfaces.

HF heating shortens vulcanising time, particularly as the curing bag is brought up to its operating temperature during preheating. Vulcanising time can be reduced from 110 minutes at 145 °C (with standard vulcanisation) to 76 minutes at 160 °C with HF preheating, with general improvement in bond strength between layers as is evidenced in Table 9. Table 10 compares rig test lives of tyres with standard vulcanisation for 110 minutes at 145 °C with lives of tyres vulcanised for shorter times at higher temperatures following HF heat treatment. Vulcanisation for 80 minutes at 155 °C following HF heating gave more than double life.

Card4/5 Figures 7 and 8 show plant for preheating tyres. The lower

SOV/138-58-11-4/14

Preheating Tyre Casings Before Moulding and Vulcanisation

electrode is formed by a conveyor belt constructed from aluminium angle sections. The upper electrodes are aluminium plates which can be raised or lowered in hydraulic rams and which are brought close to but not in electrical contact with the tyres. Tyres are preheated in this plant after moulding, before vulcanisation, for 4 1/2 minutes at 8 kV and 17 megacycles. Power consumption per tyre is 3.5 to 4 kWh. The use of HF heating is not satifactory with tyres containing electrically conductive material such as carbon black, as the presence of conductive particles on the surface of the tyre leads to instability in the heating process through short-circuiting.
There are 8 figures and 10 tables.

ASSOCIATIONS: Moskovskiy shinnyy zavod (Moscow Tyre Factory)
Nauchno-issledovatel'skiy institut shinnoy promyshlennosti
(Research Institute for the Tyre Industry)

Card 5/5

KIBAL'NIKOV, V.I.; MAKKINA, Kh.E.; PUKHOV, A.P.; TIKHOMIROV, P.I.

Decrystallization of natural rubber by heating with a high-frequency electric current. Kauch. i rez. 17 no.2:31-34 F '58. (MIRA 11:4)

1. Leningradskiy shinnyy zavod i Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Rubber) (Induction heating)

PUKHOV, A. P.

"Investigation of the Process of High-Frequency Heating of Rubber in Large Parts Prior to Placing in Vulcanizing Equipment." Cand Tech Sci, Moscow Inst Chemical Machine Construction, Min Higher Education USSR, Moscow, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

PUKHOV, A.S., kand.istoricheskikh nauk, podpolkovnik zapasa

Kronstadt, a fortress of Bolshevism, 1917. Sbor.dokl.
Voen.ist.sek. no.3:3-26 '60. (MIRA 15:9)
(Kronstadt--Revolution, 1917-1921)

PUKHOV, Aleksey Semenovich; ROZANOV, M.D., red.; LEVONEVSKAYA, L.G., tekhn.red.

[Battle of Muhu Sound; revolutionary sailors of the Baltic in defense of Petrograd in 1917] Moonzundskoe srazhenie; revoliutsionnye moriaki Baltiki na zashchite Petrograda v 1917 godu [Leningrad] Lenizdat, 1957. 117 p. (MIRA 11:5)

(Baltic Sea--European War, 1914-1918--Naval operations)

GALEKOVA, A.K., inzh.; PUKHOV, A.K., inzh.

Intensification of the drying of matchwood. Der.prom. 14 no.11:9-10 N '65. (MIRA 18:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut derevoobrabatyvayushchey promyshlennosti.

PUKHOV, Grigoriy Aleksandrovich; SYSOYEVA, Larisa Pavlovna;
VOROB'YEV, V.V., red.

[Group technology in welding] Gruppovaia tekhnologiia v svarochnom proizvodstve. Leningrad, 1965. 28 p.
(MIRA 18:5)

PUKHOV, G. A.

"Use of Slavyanov's Method for Welding High Pressure Popes Manufactured from AK-6 Alloy," Torf. Prom., No. 3, 1949. Cand. Tech. Sci.

18(4); 25(1) PHASE I BOOK EXPLOITATION SOV/2782

Pukhov, Grigoriy Aleksandrovich, Candidate of Technical Sciences

Svarka legkikh metallov i ikh splavov (Welding of Light Metals and Alloys) Moscow, Mashgiz, 1959. 175 p. Errata slip inserted. 3,000 copies printed.

Reviewer: V.I. Romanovskiy, Candidate of Technical Sciences, Docent; Ed.: D.I. Navrotskiy, Candidate of Technical Sciences, Docent; Ed. of Publishing House: G.A. Dubusova; Tech. Ed.: O.V. Speranskaya; Managing Ed. for Literature on the Design and Operation of Machinery (Leningrad Division, Mashgiz): F.I. Fetisov, Engineer.

PURPOSE: This book is intended for technical personnel in the welding industry. It may also be used by students of institutions of higher education.

COVERAGE: The author discusses problems in welding light metals and alloys by the fusion method. The topics dealt with include welding processes, welding metals, electrodes and coatings, fluxes, and shielding gases. The influence of these factors on seam quality and weld joints is discussed. Special design considerations are presented. No personalities

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are mentioned. There are 47 references: 39 Soviet, 5 English, 1 French, and 2 German.

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Bibliography 172

AVAILABLE: Library of Congress (TS227.P64)

GO/mg
12-21-59

Card 4/4

Pukhov, A.P.

Distr: 4E3d/4E2c(j)

1249. Improving bond strength between components of tyre covers by thermal treatment. Kh. E. Malkina and A. P. Pukhov. 'Prochnost' Svyazi . . .', 1954, p. 158–63. (Vses. Khim. Obshch. im. D. I. Mendeleeva, 1954). Heating tyre covers, prior to moulding and vulcanisation, to a temperature at which pore formation and provulcanisation do not occur, increases the bond strength and increases the life of the tyres. The best method is h.f. heating, which is rapid and uniform and does not involve alterations to mix formulae or to the construction. 66A21.1

6 May 2

KOROTKOVA, A.A.; MALKINA, Kh.E.; PUKHOV, A.P.; FOMINA, L.S.

High-frequency drying of latex sponge. Kauch.i rez.16 no.9:9-11
S '57. (MIRA 10:12)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i
Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.
(Foam rubber--Drying) (Induction heating)

Pukhov, A. P.

7
1-4E2c (j)
2 May

✓47. **Use of high frequency dielectric heating in the technology of rubber manufacture.** Kh. E. Malkina and A. F Pukhov. *Kauch. i. Rezina*, 1957, 16, No. 4, 23-8. Considering the dielectric properties of natural and various synthetic rubbers mixed with carbon black the author deduces their dielectric heating behaviour. Data on the dielectric properties of unfilled and filled natural rubber, SKS-30A, and SKB mixes are given. There are 9 references. 35739

947

BOGOSLOVSKIY, P.V., inzh.; PONOMAREV, Yu.I., inzh.; PUKHOV, B.I., inzh.

Low-voltage protective discharger. Energetik 9 no.5:26 My '61.
(MIRA 14:5)

(Electric discharges)
(Electric protection)

PONOMAREV, Yu.I., PUKHOV, B.I.

Bakelite low voltage arrester. Mekh. i elek. sots. sel'khoz.
19 no.3:59 '61. (MIRA 14:6)
(Electric protection)

PUKHOV, Grigoriy Aleksandrovich, kand.tekhn.nauk; ROMANOVSKIY, V.I., dotsent, kand.tekhn.nauk, retsenzent; NAVROTSKIY, D.I., dotsent, kand.tekhn.nauk, red.; DUDUSOVA, G.A., red.izd-va; SPERANSKAYA, O.V., tekhn.red.

[Welding of light metals and their alloys] Svarka legkikh metallov i ikh splavov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 175 p. (MIRA 12:7)

(Light metals--Welding) (Aluminum alloys--Welding)
(Magnesium alloys--Welding)

PUKHOV, G.A.

USSR/ Engineering—Welding

Card 1/1 : Pub. 128—24/33

Authors : Pukhov, G. A., Cand. Tech. Sci.

Title : Welding of duraluminum

Periodical : Vest. mash. 34/8, 81-82, Aug 1954

Abstract : An analysis is made of researches conducted in electric-arc and gas-flame welding of duraluminum parts, under conditions existing in the laboratory and in factories. Data are presented covering kind of metal of parts welded, materials used for electrodes, dimensions of items entering into the experiments, heat factors and time elements. Drawings; illustrations; table.

Institution : ....

Submitted : ....

PUKHOV, G.A., kandidat tekhnicheskikh nauk.

Welding of duraluminum. Vest.mash. 34 no.8:81-82 Ag '54.(MLRA 7:8)
(Duralumin--Welding)

PUKHOV, G.A., kandidat tekhnicheskikh nauk.

Arc welding of aluminum bus bars. Elek.sta. 24 no.5:51-52 Ap '53.
(MLRA 6:5)
(Electric welding)

1. IUKHOV, G. A.

2. USSR (600)

4. Electric Welding

7. Mechanizing welding work at peat enterprises, Torf, prom. 29, No. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

PUKHOV, G. A.

USSR/Engineering Mar 49
Alloys - Non-ferrous
Welding - Methods

"Use of Slavyanov's Method for Welding High-Pressure Pipes Manufactured From AK-6 Alloy," V. I. Romanovskiy, G. A. Pukhov, Candidates Tech Sci, 2 2/3 pp

"Torf Prom" No 3

Gives chemical composition of AK-6 alloy: Mn- 1.8--6%; Mg- 0.45--8%; Cu- 0.4--0.8%; remainder Al. Recommends continuous welding process used here for light alloy on an aluminum base in other branches of industry.

PA 47/49T27

FUFKOV, G. A.

Electrodes, Carbon

Arc welding copper with a carbon electrode. Elek. sta., 23, no. 8, 1952.

Monthly List of Russian Accessions. Library of Congress, November 1952. UNCLASSIFIED.

PUKHOV, G.Ye., doktor tekhn.nauk; VASIL'YEV, V.V.

The EMSS-7M specialized computer for calculating frames.
Avtom.i prib. no.3:79-80 Jl-S '62. (MIRA 16:2)

1. Vychislitel'nyy tsentr AN UkrSSR.
(Electronic analog computers)

PUKHOV, G.Ye. [Pukhov, H.IE.]; ZHUK, K.D.

Construction of n-dimensional servomechanisms using reversible models. Dop.AN URSR no.12:1565-1568 '62. (MIRA 16:2)

1. Institut kibernetiki AN UkrSSR. 2. Chlen-korrespondent AN UkrSSR (for Pukhov).
(Servomechanisms) (Mathematical models)

S/021/63/000/003/009/022
D405/D301

AUTHORS: Pukhov, ~~H.~~ G. Ye., Corresponding Member of the AS UkrRSR, Borkovs'kyy, B. A. and Stepanov, A. Ye.

TITLE: Simulation method for continuous operators

PERIODICAL: Akademiya nauk UkrRSR. Dopovidi. no. 3, 1963, 325-331

TEXT: A quasi-analog simulation method is proposed which enables one to solve equations without prior analytic transformations. The unknowns are simulated by the output voltages of amplifiers. An operator which corresponds to the relationship

$$\sum_{i=1}^{n} a_i x_i + \sum_{i=1}^{n} b_i \frac{dx_1}{dt} + \sum_{i=1}^{n} c_i f_i (x_1, \ldots, x_n) = 0 \qquad (1)$$

is simulated by several elements; in very simple cases by triple poles. The coefficients A_i and c_i are simulated by ohmic conducti-

Card 1/3

S/021/63/000/003/009/022
D405/D301

Simulation method for ...

vities, the coefficients b_i by capacitances, and the unknowns x_i by voltages. Nonlinear and transcendental functions are simulated by ordinary (irreversible) functional elements. The design and the operating principle of a model operator are illustrated by an example involving the solution of an algebraic equation. The method can be used for design of various linear and nonlinear operators which enable one to obtain any unknown variable as a function of other unknowns. The following very simple types of operator circuits are shown schematically: a) A linear algebraic converter; b) an integrator-differentiator; c) a device for multiplication division; d) an algebraic-functional coverter; and e) a nonlinear differential converter. The method can be used for simulation of one-dimensional as well as multi-dimensional operators. Thus, e.g. it is possible to simulate the system of linear algebraic equations

$$AX + F = 0$$

with an arbitrary matrix A and a non-vanishing determinant. The model of this system of equations is absolutely stable. Only opera-

Card 2/3

Simulation method for ...

S/021/63/000/003/009/022
D405/D301

tors with positive coefficients were considered; but this does not involve any loss of generality, since the analysis can be readily extended to any operator with sign-alternating coefficients. The method was experimentally checked on one-dimensional algebraic, linear and nonlinear differential operators, and on systems of linear algebraic equations. The results were satisfactory. The method can be used for simulating linear and nonlinear operators, of linear algebraic equations, in the synthesis of automatic control systems, etc.

ASSOCIATION: Instytut kibernetyky AN URSR (Institute of Cybernetics of the AS UkrRSR)

SUBMITTED: August 18, 1962

Card 3/3

S/777/61/000/000/004/005

AUTHORS: Pukhov, G. Ye., Vasil'yev, V. V., Grezdov, G. I., Karandakov, G. V., Proskurin, Ye. A., Levin, A. G.

TITLE: Device for the visual observation of the voltage distribution in electric-grid models.

SOURCE: Voprosy vychslitel'nyy tekhniki; mashiny, ustroystva, elementy i ikh primeneniye. Ed. by A. M. Novik. Kiyev, Gostekhizdat USSR, 1961, 99-104.

TEXT: The paper proposes a device that provides a reading of the most significant voltage values in electric analogs and thus afford a representation, for example, of the maximum values and the general character of the variation of bending moments in an electric analog of a stressed beam. The voltages to be measured enter a multichannel commutator, where a control block governs their successive entry into the imput of a cathode-ray indicator (CRT) over a time τ. The scanning of the CRT is synchronized with the beginning of the commutation, and its duration is selected to equal the commutation period of the entire ensemble of the voltages to be measured. The 3 alternative versions of this arrangement differ in the type of the commutator used and the method of the synchronous scanning along the axis of the abscissae: (1) An electromechanical commutator with a step-by-step switch.

Card 1/2

(2) An electromechanical commutator with a collector. (3) An electronic commutator. An experimental investigation of these 3 types of commutators denotes their respective advantages and shortcomings: Advantages: Type (1) - simple design; permits the use of stock types of step-by-step switches; type (2) - relative freedom from noise; type (3) - total freedom from noise. Types (1) and (2) - direct voltage commutation with a transmission coefficient equal to 1 in all channels; type (3) - elevated commutation rate. Type (1) - commutator can be stopped at any step of the switch; type (2) - can operate with the ordinary ЭО7 (EO7) indicator; type (3) - no mechanical contacts, no rotation. Shortcomings: Type (1) - requirement for an indicator with prolonged image persistence; type (3) - awkward design if ordinary electron tubes are used for the commutation with a large number of points; types (1) and (2) - requirement for mechanical contacts and rotating parts; type (3) - need for equalization of the constants of the component gates and of the amplification according to channels to prevent a scatter of circuit and tube parameters when tubes are replaced; type (1) - significant noise effects during the motion of the switch. All three types do not permit the reading of voltages when the latter vary with a frequency that is close to the scanning frequency. There are 6 figures.

PUKHOV, G.Ye. (Kiyev)

Some methods for balancing electric circuits. Avtometriia no.1: 76-83 '65. (MIRA 18:7)

L 2776-66 EWT(d)/EED-2/EWP(1) IJP(c) BB/GG

ACCESSION NR: AP5022022

UR/0286/65/000/014/0092/0093
681.142.07

AUTHOR: Pukhov, G. Ye. 44

TITLE: A reversible converter. 16, 44 Class 42, No. 173048

33
B

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 92-93

TOPIC TAGS: mathematic matrix, computer component

ABSTRACT: This Author's Certificate introduces a reversible converter for changing *n*-*m* voltages into *m* voltages for the case of limitations of the form $Ax = q$ where A is a matrix of rank m having m rows and n columns. The converter is simplified and power requirements are reduced by using two capacitance matrices for simulation of A and a final electronic amplifier which is alternately connected by switches to the horizontal buses of the capacitance matrices. The vertical buses of the matrices are interconnected and are used for sending and receiving the voltages which modulate the components of X.

ASSOCIATION: Institut kibernetiki AN UkrSSR (Institute of Cybernetics, AN UkrSSR) 44

SUBMITTED: 14May64 ENCL: 01 SUB CODE: DP, EC

NO REF SOV: 000 OTHER: 000

Card 1/2

L 2776-66

ACCESSION NR: AP5022022

ENCLOSURE: 01

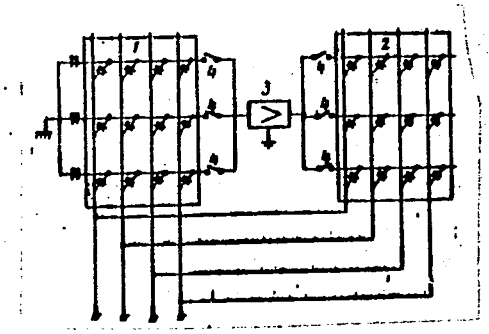


Fig. 1. 1 and 2--capacitance matrices; 3--final amplifier; 4--switches

Card 2/2 hd

GLUSHKOV, V.M., otv. red.; KUKHTENKO, A.I., zam. otv. red.; BLAGOVESHCHANSKIY, Yu.V., red.; DORODNITSYN, A.A., red.; YERSHOV, A.P., red.; LYAPUNOV, A.A., red.; MOSKALEV, I.S., red.; PUKHOV, G.Ye., red.; ROSTUNOV, T.I., red.; SAMOKHVALOV, K.G., red.; STOGNIY, A.A., red.; TIMOFEYEV, B.B., red.; SHCHERBAN', A.N., red.; LETICHEVSKIY, A.A., red.; KAPITONOVA, Yu.V., red.; MEL'NIK, T.S., red.

[Problems of theoretical cybernetics] Voprosy teoreticheskoi kibernetiki. Kiev, Naukova dumka, 1965. 209 p. (MIRA 18:9)

1. Akademiya nauk URSR, Kiev.

PUKHOV, G.Ye., otv. red.; MEL'NIK, T.S., red.

[Mathematical modeling and the theory of electric circuits; transactions] Matematicheskoe modelirovanie i teoriia elektricheskikh tsepei; trudy. Kiev, Naukova dumka. No.3. 1965. 318 p. (MIRA 18:11)

1. Akademiya nauk URSR, Kiev. Institut kibernetiki. Seminar po metodam matematicheskogo modelirovaniya i teorii elektricheskikh tsepey. 2. Chlen-korrespondent AN Ukr.SSR (for Pukhov).

PUKHOV, G. Ye.

Cand. Technical Sci.

Mbr., L'vov Polytechnical Inst., -1949-. Docent, Tomsk Electro-Mechnical Inst. Railroad Transport Engineerings, -c1950-.

"Stability of the Steady State Operation of the Series Synchronous Condenser," Elektrichestvo, No. 5, 1949;

"General Equations of a Four-Terminal Network, ibid., No. 1, 1950;

"Equations of a Four-Terminal Network in a Complex Electric Circuit," ibid., No. 5, 1950.

[illegible], [illegible] [illegible]

USSR/Electricity - Systems, Electric Jan 50

"General Equations of a Four-Terminal Network," Prof R. A. Voronov, Dr Tech Sci, Docent G. Ye. Fukhov, Cand Tech Sci, Tomsk Electromech Inst of RR Transport Engineers, 6 pp

"Elektrichestvo" No 1

Examines equations of four-terminal network which are more general than those ordinarily used. Shows how to solve, by means of proposed equations, such problems as shunting and short-circuiting terminals of four-terminal networks, switching them off from general circuit, how to replace certain four-terminal networks by equivalent ones, etc.
Submitted 27 Sep 49.

PA 15/T24

PUKHOV, G. YE., Docent

PA 167T12

USSR/Electricity - Four-Terminal Networks May 50
Linear Equations

"Equations of a Four-Terminal Network in a Complex Electric Circuit," Docent G. Ye. Pukhov, Cand Tech Sci, L'vov Polytech Inst

"Elcktrichestvo" No 5, pp 55-57

Proves method used for calculating complex circuits of four-terminal networks suffers from intrinsic defect: equations on which based do not reflect physical state of four-terminal network. To solve problem in general form, must describe state of each four-terminal network with three independent

167T12

USSR/Electricity - Four-Terminal Networks May 50
(Contd)

equations written as a general linear relationship. Submitted 23 Sep 49.

167T12

PUKHOV, G. YE.

PUKHOV, G. YE.

Pukhov, G. Ye. defended his Doctor's dissertation in the Tomsk Polytechnic Institute im Kirov, USSR, on 28 November 1951, for the academic degree of Doctor of Technical Sciences.

Dissertation: "Elements of the Theory of Composite Electric Networks". Resume: Pukhov proposes an original and productive method for theoretical analysis of complex electric networks composed of different combinations of multiterminal networks by breaking the complex networks down into elementary subcircuits. The new method has practical importance for calculating complex electric circuits used in electrical engineering, radar, and other branches of modern electrical engineering.

Official Opponents: Profs. P. A. Azbukin, R. A. Voronov, and V. K. Shcherbakov (Doctors of Technical Sciences).

SO: Elektrichestvo, No. 7, Moscow, August 1953, pp 87-92 (W/29344, 16 Apr 54)

USSR/Electricity - Circuit Analysis Aug 52
Electronics - Microwave Tubes

"Theory of the Method of Subcircuits," Docent G. Ye. Pukhov, Dr Tech Sci, Tomsk Polytech Inst imeni Kirov

"Elektrichestvo" No 8, pp 65-73

235T35

Outlines and cites examples to illustrate method for calcg complex elec circuits by splitting them into component multiterminal networks (subcircuits). By dividing currents and voltages of subcircuits into 4 categories (input, output, additive, and common), parameters of the equiv circuit are obtained without supplementary eqs expressing interrelations of subcircuits. Refers to book "Centimeter Band Magnetrons," edited by S. A. Zusmanovskiy, 1950. Submitted 27 Jun 51.

235T35

PUKHOV, G. YE.

PUKHOV, G.Ye.

Theory of the power of a system of periodic multiphase currents. Elektrichestvo '53, No.2, 56-61.
(EEA 56 no.672:4703 '53) (MLRA 6:3)

PUKHOV, G. YE.

USSR/Electricity - Literature Education

Jun 53

"Discussion on a Textbook of Theoretical Electrical Engineering for Higher Schools," Prof V. B. Romanovskiy, Dr Tech Sci (Tomsk Electromech Inst of Rwy Transport Engrs), G. Ye. Pukhov, Dr Tech Sci, Engrs B. A. Borkovskiy and V. N. Sosunov (all from Tomsk Polytech Inst im Kirov)

Elektrichestvo, No 6, pp 68-70

Contains (a) editorial statement that this is start of discussion on creation of high-quality text on theoretical elec eng, (b) comment by Romanovskiy on book "Theoretical Bases of Electrical Engineering" ("Teoreticheskiye osnovy elektrotekhnike") by P. L. Kalantarov and L. R. Neyman, (c) comment by Voronov et al. on book "Fundamentals of Electrical Engineering" (Osnovy elektrotekhniki) by K. A. Krug.

268T56

ORLOVSKIY, A.V., professor; LYUTER, R.A., doktor tekhnicheskikh nauk; KAZOVSKIY, Ye.Ya., kandidat tekhnicheskikh nauk; YAKOBSON, El'mar, inzhener; ANTOPOL'SKIY, V.M., inzhener; PUKHOV, G.Ye., doktor tekhnicheskikh nauk; FYURSTENBERIN, A.I., inzhener; BERGER, A.Ya., professor (Leningrad); TSVERAVA, G.K., inzhener; KRAYNIY, K.I., inzhener (g.Kotovsk, Tambovskoy obl.); BELOV, V.N., inzhener (g.Ul'yanovsk).

Correspondence conference of readers of "Elektrichestvo" Elektrichestvo no.8:89-91 Ag '53. (MLRA 6:8)

1. Kiyevskiy politekhnicheskiy institut (for Orlovskiy). 2. Zavod "Elektrosila" (for Lyuter and Kazovskiy). 3. Estonkommunenergo (for Yakobson). 4. Saratovskiy industrial'nyy tekhnikum (for Antopol'skiy). 5. Tomskiy politekhnicheskiy institut imeni Kirova (for Pukhov). 6. Tikhvinskiy glinozemnyy zavod (for TSverava). (Electric engineering--Periodicals)

Electrical Engineering Abstracts
May 1954
Electric Waves and Oscillations

2060. Application of methods of investigation of electrical circuits to the solution of problems of the bending of planar frameworks. G. E. PUKHOV. *Elektrichestvo*, 1953, *No.* 9, 50-4. *In Russian.*

The method is based on the representation of a beam under bending stresses by an active electric tripole instead of by an octupole as is usual. The angles are represented by voltages, or e.m.f.'s, and the bending moments by currents. It is easy to see that the electro-mechanical analogy is complete, i.e. that the conditions of every interesting and possible stress case may be represented by electrical parameters. Continuous (statically indeterminant) girders may be treated by analogy with electric networks with repeated members, this being one of the main attractions of the method. Four illustrative problems are solved by electrical analogies. B. F. KRAUS

Tomsk Polytech Inst. im. Kirov

PUKHOV, G. YE.

VORONOV, R.A., professor, doktor tekhnicheskikh nauk; PUKHOV, G.Ye., dotsent, doktor tekhnicheskikh nauk; LUR'YE, L.S., kandidat tekhnicheskikh nauk.

Apparent capacity of an electric circuit. Elektrichestvo no.4:81 Ap '54. (MLRA 7:5)

(Electric circuits)

PUKHOV, G. YE.

AID P - 939

Subject : USSR/Electricity

Card 1/1 Pub. 27 - 8/25

Authors : Pukhov, G. Ye., Doc. Tech. Sci., Prof., Taganrog;
Amosova, S. P., Eng., Tomsk

Title : Calculation of nonlinear d-c and a-c circuits

Periodical : Elektrichestvo, 10, 39-42, O 1954

Abstract : The method presented permits in case of convergent iterations to design a circuit containing any number of nonlinear elements. The calculations are made for a circuit composed of elements which do not cause a sensible deviation from the sinusoidal currents. Six diagrams, 8 references (1949-1952).

Institutions: Taganrog Radio Institute and Tomsk Polytechnic
Institute im. Kirov

Submitted : My 6, 1954

Pukhov, G. Ye.

AID P - 2345

Subject : USSR/Electricity

Card 1/1 Pub. 27 - 9/30

Authors : Borkovskaya, V. N., Eng., and Pukhov, G. Ye., Doc. of Tech. Sci., Prof. Taganrog

Title : Calculation of 3-phase circuits with an arbitrary number of simultaneous short-circuits and phase rupture

Periodical : Elektrichestvo, 5, 40-44, My 1955

Abstract : The authors attempt to introduce some simplifications into the calculations of complex unsymmetrical networks. Theories presented by several Soviet scientists in publications enumerated at the end of the article assume with n points of asymmetry the setting up and solution of $6n$ equations. The authors reduce the number of equations to n and present the results of their calculation in 2 tables of formulas. Two diagrams, 10 Soviet references (1-1933, 9-1946-1952).

Institution: Taganrog Institute of Radio Engineering

Submitted : Jl 3, 1954

SOV/124-59-1-925

Translation from: Referativnyy zhurnal. Mekhanika, 1959, Nr 1, p 133 (USSR)

AUTHOR: Pukhov, G.Ye.

TITLE: On the Application of Three-Pole Electrical Circuits to the Solution of Certain Problems of the Construction Mechanics

PERIODICAL: V sb.: Elektr. modelirovaniye balok i ram. Taganrog, 1956, pp 7-16

ABSTRACT: Two simple circuits for electric simulation of the loads and the deformations of an one-span beam are proposed. This method makes it possible to simulate more complicated rod systems. The transition method from the given electrical measurements to the diagrams of bending moments is described. But the necessity of numerical calculations is by far not yet eliminated. The problem of the accuracy of the solution by means of analogs is not treated. It is demonstrated that the calculations by the method foci in the theorem of three moments "are analogous to the methods, which are applied in calculations of electrical circuits...", and that "... it makes it possible to calculate the bending moments and other quantities by the same methods, which are applied in the theory of electric circuits, and also to determine the indicated quantities by means of simple

Card 1/2

124-11-13315

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p 145 (USSR)

AUTHORS: Pukhov, G. Ye., Il'yenko, O. V., Chegolin, P. M.

TITLE: Electrical Simulation of a Flexible Bar.
(Elektricheskiye modeli izgibayemogo sterzhnya.)

PERIODICAL: V sb.: Elektr.modelirovaniye balok i ram. Taganrog, 1956, pp 17-21

ABSTRACT: Bibliographic entry

Card 1/1

SOV/124-58-4-4524

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr4, p122(USSR)

AUTHORS: Pukhov, G. Ye., Chegolin, P. M.

TITLE: Reduction of a Vibrating System of Bars to a Three-conductor Electrical Circuit (Privedeniye vibriruyushchey sterzhnevoy sistemy k elektricheskoy tsepi, sostoyashchey iz trekhpolyusnikov)

PERIODICAL: V sb.: Elektr. modelirovaniye balok i ram. Taganrog, 1956, pp 59-71

ABSTRACT: The paper analyzes electromechanical analogs. The author demonstrates the possibility of the application of the three-conductor method to the case of a dynamic bar system. The following questions are consecutively analyzed: The reduction of a vibrating weightless bar with concentrated masses to a three-conductor electrical system, and the transverse vibrations of heavy bar systems carrying concentrated masses under the action of arbitrarily pulsating forces. With the help of electric analog simulation the author has calculated a two-span frame with a pulsating load in one of the spans. He demonstrates the close agreement of the results of the respective calculation

Card 1/2

SOV/124-58-4-4524

Reduction of a Vibrating System (cont.)

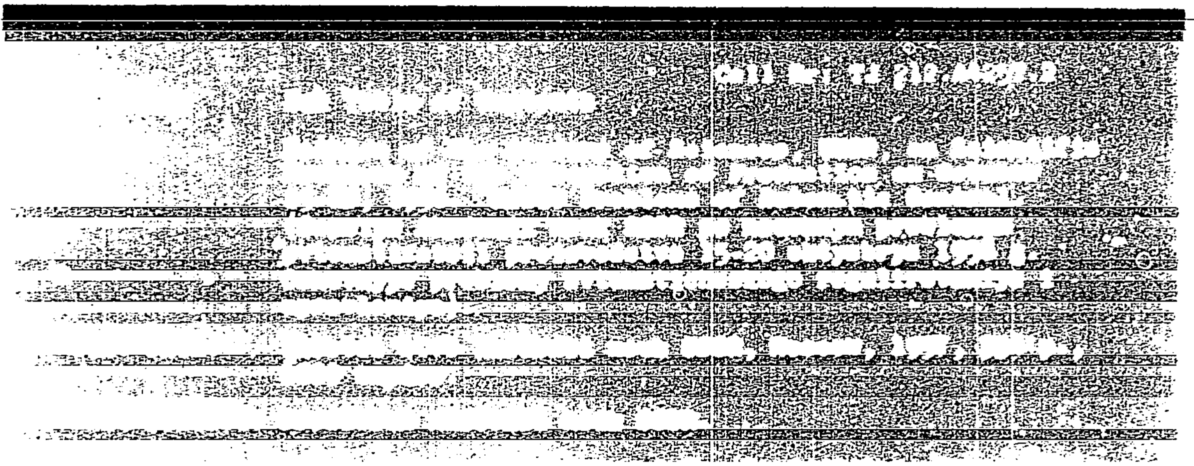
with the results of the calculation of the same frame by the well-known analytical methods. Bibliography: 10 references.

N. I. Bezukhov

1. Beams--Simulation 2. Beams--Vibration 3. Electrical networks--Applications

Card 2/2

TUKHOV, G. E.



[illegible]

Session of the Academy of Sciences, USSR, on Scientific Problems of the Automation of Production on October 15-20, 1956. (cont)

PURPOSE: To present in published form the materials of the session of the USSR Academy of Sciences on scientific problems of automatization in production, which took place on October 15-20, 1956.

[illegible] [illegible] with a different aspect of automatic control in industry. The papers included in this volume discuss essentially the present status, methods, problems and developmental trends in automatic control. The book deals with Russian contributions. See Table of Contents for personalities and references.

Call Nr: TJ212.A42[illegible]

Session of the Academy of Sciences, USSR, on Scientific Problems of the Automation of Production on October 15-20, 1956 (cont)

There are 10 references, [illegible] of which are Soviet, and [illegible]

[illegible]

Kiselev, I. [illegible]

Research on nonlinear automatic [illegible] is mentioned by Kiselev, I.I.

AUTHOR PUKHOV G.Ye., Dr.techn.Prof., IL'YENKO C.V., Ing., CHEGOLIN P.M., Ing. PA - 3164

TITLE Electrical Models for a Bendable Beam.
(Elektricheskiye modeli izgibayemogo sterzhnya -Russian)

PERIODICAL Elektrichestvo, 1957, Vol ?, Nr 5, pp 45 - 47, (U.S.S.R.)

Received 6/1957 Reviewed 7/1957

ABSTRACT Several different electrical models of a bendable beam were proposed. These models do not have negative resistances and are therefore free of the defects which are usually connected with the electronic amplifier provided models. One of the schemes is, because of the unsymmetry in regard to the longer axis, usable only for modelling in those beam systems which do not produce a closed current system. There is also a system shown which is symmetrical in regard to the longer axis. A scheme without negative resistance can be maintained by means of a contact closing of quadripoles from resistances with an ideal transformer, whereby the transformer coefficient is 1:1.
(With 6 ill. and 3 Slavic references)

ASSOCIATION Radio Technical Institute of Taganrog

PRESENTED BY

SUBMITTED 13.4.1956

AVAILABLE Library of Congress

Card 1/1

9,3220

S/112/59/000/012/003/097
A052/A001

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 12, p. 6,
23962

AUTHORS: Pukhov, G. Ye., Kalyayev, A. V.

TITLE: Determination of Initial Conditions of Differential Equation of a Composite Electric Circuit 25

PERIODICAL: Tr. Taganrogsk. radiotekhn. in-ta, 1957, 3, No. 2, pp. 129-137

TEXT: A method of direct calculation of initial values of currents of a composite circuit is exposed. Thereby the starting initial conditions for the system of circuit equations are represented in the form of initial values of full flux linkages in each of independent circuits ψ_d and in the form of a sum of initial voltage values U_{sc} on the capacitors contained in each of the circuits. Recurrent formulae are given which permit the determination of initial values of the current sought for and its derivatives one after another.

✓B

T. P. S.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

[illegible] Ye.

AUTHOR: BONDARENKO,V.M., Engineer, 105-8-8/20
PUKHOV,G.Ye., Dr. techn. sc.

TITLE: On a Numerical Method for Calculating Electric Circuits.
(Ob odnom chislennom metode rascheta nekotorykh elektricheskikh tsepey, Russian)

PERIODICAL: Elektrichestvo, 1957, Nr 8, pp 44 - 46 (U.S.S.R.)

ABSTRACT: A method is proposed, by which the calculation of a certain class of electric circuits can be carried out not only without a joint solution of large systems of equations, but also without a substantial transformation of the circuit. A solution in a general form cannot be found by this method, but the numerical values of current intensities can be determined. The method propsed here is more complete than that proposed by O.M.BOGATYREV (Elektrichestvo, 1954, Nr 2), since an analytical solution can be found here and therefore a greater accuracy of calculation can be obtained. It is true that the method is intended for direct current here, but it can also be used for the calculation of alternating-current circuits, namely for linear circuits and, in form of an approximate calculation, for non-linear circuits. An example is calculated.

Ca~~rd 1/2~~

S/112/59/000/015/002/068
A052/A002

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 15, p. 7,
30847

AUTHOR: Pukhov, G.Ye.

TITLE: A Complex Method of Calculating Periodic and Transient Processes in Non-linear and Linear Systems

PERIODICAL: Tr. Taganrogsk. radiotekhn. in-ta, 1958, No. 2, pp. 89-103

TEXT: The function f(t) of a real variable on a section 0 - T is represented by a trigonometric Fourier series, whose complex amplitude of its ν -th harmonic is equal to

$$F_{\nu} = k_{\nu}\left[f(t)\right] = \frac{2j}{T}\int_{0}^{T} e^{-j\nu\omega t} f(t)\, dt.$$

The author discusses the principal theorems of complex transformations: in linearity theorem, lag theorem, theorem of complex representation of a product of originals, of a derivative of an original and its integral. Applying the

Card 1/2

S/112/59/000/015/002/068
A052/A002

A Complex Method of Calculating Periodic and Transient Processes in Non-linear and Linear Systems

16

method for non-linear differential equations reduces these to algebraic equations, which, if only the first harmonics are considered, degenerate in harmonic balance equations of N.M. Krylov and N.N. Bogolyubov. It is recommended to solve non-linear algebraic equations by the iteration method. The method is illustrated by: 1) a calculation of the quality of a transient process in a automatic control system with constant parameters; 2) a calculation of a transient process when starting a motor at a quadratic dependence of the moment of resistance forces on the angular speed; 3) a calculation of a forced periodic process in an electric circuit with a variable inductance and a non-linear, non-reactive resistance.

L.A. Ye.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

PUKHOV, G.Ye., prof., doktor tekhn, nauk; IL'YENKO, O.V., kand.tekhn.nauk

Taking into account bends in foundations of supports in designing electric analyzers for frames. Trudy RISI no.11:72-75 '58. (MIRA 13:5)

1. Taganrogskiy radiotekhnicheskiy institut.
(Foundations)
(Structural frames--Electromechanical analogies)

PUKHOV, G. Ye., prof., doktor tekhn.nauk; CHEGOLIN, P.M., kand.tekhn.nauk

Electric analyzers for beams with varying cross sections. Trudy
RISI no.11:92-102 '58. (MIRA 13:5)

1. Taganrogskiy radiotekhnicheskiy institut.
(Girders--Electromechanical analogies)